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ABSTRACT

Many community colleges have a need for a mathematics placement test which tests achievement for initial placement in the different levels of mathematics classes. Merrit College investigated this need by examining the scores of all the entering students who did not complete the mathematics section of the School and College Ability Test which they administered. The results of the test indicate a wide discrepancy between the percentages correct of the problems completed and the national percentile standings. It is suggested that such a placement test should not put this type of student under the pressure of speed. (Author/MLP)

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RESEARCH REPORT NO. 3

A Brief Study of Those Not Completing the Mathematical Part of the School and College Ability Test

April, 1974

Dayton Axtell, Ph. D.

1. Description of the study

Each semester, Merritt College administers the School and College Ability Test (Series II, form 1B) to those entering students who have less than one year of college work completed. (Not all such students take this test since results of the ACT and SAT tests are accepted in lieu of the SCAT). The SCAT consists of verbal (V) and mathematical (Q) parts, each part having 50 questions and each part timed for exactly 20 minutes. Students having no previous mathematics courses are placed in a basic mathematics review course if they score below the 31st percentile on 13th grade national percentile norm tables. If they place at or above the 31st percentile, there are no guidelines from the test to help decide which starting mathematics levels are appropriate, if they wish to take mathematics.

Most of the new students at Merritt taking the SCAT have had no college work at all. Because of the geographical proximity of two State Universities and the University of California at Berkeley, those students with high academic high school achievement records often choose to go directly to one of these universities as freshmen, because they can continue to live less expensively at home. Thus, the incoming Merritt population tends to be skewed somewhat toward the low academic achievement side, as compared with more isolated community colleges. In order to live at home for the first two years, a more representative group of all high school graduates will attend local community colleges which are distant from any public university.

Timed tests put all students under a strain which often precludes making their best showings. Mr. James Hill, a member of the Merritt counseling staff, suggested that still another factor may be adversely affecting students who are not "test-wise". This is the tendency to try to complete each problem before going on to the next one. His suggestion prompted this study of the tests given January 5 and January 12, 1974, in which the scores of all those students who did not complete the Q part of the SCAT were examined. The percent correct of those problems completed was calculated and compared with national percentile standings.

2. Results:

For both test dates, it will be seen from the data in Appendicies I and II that wide discrepancies exist between the percentages correct of those done, and the national percentile standings. The averages, and the percent of those not completing the test, are shown at the end of the data in appendicies I and II.

3. Discussion

a. Of interest first is the fact that for each test date more than 2/3 of the students did not complete the mathematics part, though perhaps this is not unusual in a speed test of this sort. No comparative data are available. However, almost 70% not finishing does seem high.

b. Of much more interest is the comparison between columns (4) and (5), though in a sense this is like comparing apples to oranges. We can tell which we like better-but we cannot make valid statistical comparisons since the bases for the figures are different. However, it is valid for us to decide which figures we prefer for placement or other purposes; those in column (4) or those in column (5). If we want to test the ability of students to accurately complete mathematical problems quickly, then column (5) is obviously the more important. If, however, we are not too interested in speed then column (4) probly gives a better indication, especially in view of the type of student taking the test, and the fact that the SCAT is not a power test. (Obviously, the results in column (4) could be carried to a ludicious extreme: that of a student completing correctly one out of a total of two problems attempted which would give him 50% correct. However, an examination of column (2) shows that very few stopped at an extremely low numbers of problems.)

c. At Merritt, as at many community colleges, there is a significant need for a mathematics placement test which tests power, for initial placement in the different levels of mathematics classes. Such a test should not put the type of student we have under the pressures of speed.

d. Appreciation is due Marie Tisak who did the detail work required to assemble these data, to Mercedes Lara who helped with the typing, and as always to Dean Wilfred Desrosiers for his support of research work.

Appendix I

Data for Test Given January 5, 1974

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we use
76	30	27	90	47
8	34	30	88	61
24	31	27	87	47
51	28	23	82	31
26	30	24	80	36
93	29	23	79	31
15	26	20	77	21
64	22	17	77	13
77	22	17	77	13
90	31	24	77	36
17	23	17	74	13
45	27	20	74	21
68	31	23	74	31
88	30	22	73	28
71	36	26	72	44
13	31	22	71	28
49	30	21	70	24
60	37	26	70	44
87	33	23	70	31
50	42	29	69	57
61	26	18	69	15
81	36	25	69	40
47	31	21	68	24
84	31	21	68	24
85	34	23	68	31
89	48	32	67	68
22	23	15	65	8
21	33	21	64	24
20	30	19	63	18
35	27	17	63	13
75	32	20	63	21
57	26	16	62	10
6	28	17	61	13
52	28	17	61	13
65	36	22	61	28
39	25	15	60	8
40	27	16	59	10
38	36	21	58	24
58	31	18	58	15

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we us
78	26	15	58	8
11	28	16	57	10
66	14	8	57	1-
79	25	14	56	5
23	33	18	55	15
67	22	12	55	3
27	28	15	54	8
43	45	24	53	36
30	31	16	52	10
4	30	15	50	8
31	42	21	50	24
33	38	19	50	18
34	38	19	50	18
55	24	12	50	3
69	30	15	50	8
1	32	15	47	8
41	36	17	47	13
44	39	18	46	15
28	22	10	45	1
54	40	18	45	15
62	31	14	45	5
56	41	18	44	15
59	45	20	44	21
92	18	8	44	1-
74	30	13	43	4
91	35	15	43	8
36	19	8	42	1-
7	49	20	41	21
72	46	19	41	18
25	35	14	40	5
53	30	12	40	3
3	28	10	36	1
16	48	17	35	13
80	26	9	35	1-
83	23	8	35	1-
29	32	11	34	2
18	49	16	33	10
82	24	8	33	1-
86	30	10	33	1
10	34	11	32	2
42	25	8	32	1-
37	32	10	31	1
48	48	14	29	5
19	37	10	27	1
14	31	8	26	1

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we use
2	24	6	25	1
19	36	8	22	1-
70	49	11	22	2
12	33	7	21	1-
63	28	6	21	1-
46	49	10	20	1
73	30	6	20	1-
32	18	3	17	1-
5	0	0	0	1-

Total N taking January 5 test = 136

Σ = 4861
N = 93
$\bar{X}$ = 52.27

Σ = 1441.
N = 93
$\bar{X}$ = 15.49

Those not finishing: N=93

$\frac{93}{136}$ =68.4%

Appendix II

Data for Test Given January 12, 1974

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we us
104	36	34	94	75
147	36	34	94	75
115	46	43	93	94
89	46	42	91	93
72	48	43	90	94
98	45	40	89	89
114	37	33	89	72
131	34	29	85	57
93	39	32	82	68
21	27	22	81	28
53	32	26	81	44
16	33	26	79	44
24	29	23	79	31
113	36	28	78	52
138	32	25	78	40
49	33	25	76	40
63	42	32	76	68
88	38	29	76	57
38	28	21	75	24
92	24	18	75	15
62	34	25	74	40
108	33	24	73	36
112	37	27	73	47
60	11	8	73	1-
29	31	22	71	28
77	28	20	71	21
15	27	19	70	18
20	39	26	70	44
51	34	23	68	31
69	38	26	68	44
70	44	30	68	63
107	38	26	68	44
139	38	26	68	44
13	27	18	67	15
25	30	20	67	21
34	24	16	67	10
42	32	21	66	24
38	34	22	65	28
47	39	25	64	40
121	33	21	64	24
141	36	23	64	31
9	46	29	63	57

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we us
57	30	19	63	18
142	32	20	63	21
73	37	23	62	31
85	29	18	62	15
37	33	20	61	21
59	25	15	60	8
96	34	20	59	21
4	40	23	58	31
31	24	14	58	5
18	21	12	57	3
23	35	20	57	21
6	25	14	56	5
8	27	15	56	8
2	19	16	55	10
52	38	21	55	24
78	49	27	55	47
81	26	14	54	5
148	24	13	54	4
19	36	19	53	18
68	36	19	53	18
83	36	19	53	18
120	36	19	53	18
140	47	25	53	40
82	33	17	52	13
123	31	16	52	10
65	35	18	51	15
119	45	23	51	31
5	36	18	50	15
11	34	17	50	13
46	30	15	50	8
48	28	14	50	5
54	44	21	50	24
74	42	21	50	21
91	28	14	50	5
113	24	12	50	3
127	34	17	50	13
144	26	13	50	4
43	49	24	49	36
56	49	24	49	36
58	43	21	49	24
122	47	23	49	31
111	33	16	48	10
116	42	20	48	21
143	27	13	48	4
76	32	15	47	8
100	19	9	47	1-
105	32	15	47	8

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we use)
35	24	11	46	2
84	35	16	46	10
103	24	11	46	2
46	28	13	46	4
44	38	17	45	13
71	49	22	45	1-
135	33	15	45	8
50	32	14	44	5
67	39	17	44	13
87	34	15	44	8
137	32	14	44	5
145	48	21	44	24
149	36	16	44	10
150	48	21	44	24
54	22	9	41	1-
90	27	11	41	2
109	49	20	41	21
129	48	19	40	18
136	30	12	40	3
80	31	12	39	3
133	38	15	39	8
14	24	9	38	1-
86	32	12	38	3
27	35	13	37	4
101	30	11	37	2
7	45	16	36	10
17	50	18	36	15
33	28	18	36	15
99	31	11	35	2
12	29	10	34	1
3	42	14	33	5
32	30	10	33	1
39	48	16	33	10
92	30	10	33	1
134	24	8	33	1-
132	34	11	32	2
30	45	14	31	5
75	49	15	31	8
79	43	13	30	4
26	49	14	29	5
55	18	5	28	1-
102	45	12	27	3
125	49	13	27	4
128	26	7	27	1-

(1) Student ID #	(2) Stopped at question #	(3) Total correct of those done (Raw score)	(4) % correct of those done	(5) %-ile from National Norms (the scores we u
130	49	13	27	4
10	34	9	26	1-
40	48	12	25	3
110	48	12	25	3
118	29	7	24	1-
66	35	8	23	1-
28	33	7	21	1-
22	26	5	19	1-
1	31	6	19	1-
61	24	4	17	1-
41	49	8	16	1-
106	29	4	14	1-
94	48	5	10	1-
124	0	0	0	1-

Total N taking Jan 12 test = 213

Σ = 7597
N = 147
$\bar{X}$ = 51.68

Σ = 2950
N = 147
$\bar{X}$ = 20.07

Those not finishing: N= 147

$\frac{147}{213}$ = 69.0%